EBERLINE
SERVICES

August 8, 2005

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Avenue
Richland, WA 99352

Reference: **P.O. #630**
Eberline Services R5-06-203-7286, SDG H3226

Dear Mr. Trent:

Enclosed is the data report for one water sample designated under SAF No. F05-024 received at Eberline Services on June 23, 2005. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

MCM/

Enclosure: Data Package

00000001

Eberline Services
W.O. No. R5-06-203-7286

Fluor Hanford Inc.
SDG H3226

Case Narrative

Page 1 of 1

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H3226 was composed of one water sample designated under SAF No. F05-024 with a Project Designation of: 216-A-8 Crib Characterization Borehole – QC Samples.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

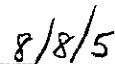### 2.0 ANALYSIS NOTES

2.1 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Mel Mann

Melissa C. Mannion
Senior Program Manager

8/8/5
Date

E B E R L I N E   S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H3226

SDG <u>7286</u> Contact <u>Melissa C. Mannion</u>	Client <u>Hanford</u> Contract <u>No. 630</u> Case no <u>SDG_H3226</u>

S U M M A R Y   D A T A   S E C T I O N

T A B L E   O F   C O N T E N T S

Melissa Mann
Prepared by

Melissa Mann
Reviewed by

Lab id	<u>EBRLNE</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-TOC</u>
Version	<u>3.06</u>
Report date	<u>08/08/05</u>

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SDG <u>7286</u> Contact <u>Melissa C. Mannion</u>	**R E P O R T G U I D E**	Client <u>Hanford</u> Contract <u>No. 630</u> Case no <u>SDG_H3226</u>

A B O U T   T H E   D A T A   S U M M A R Y   S E C T I O N

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id	<u>EBRLNE</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-RG</u>
Version	<u>3.06</u>
Report date	<u>08/08/05</u>

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SDG 7286		Client Hanford
Contact Melissa C. Mannion	GUIDE, cont.	Contract No. 630
		Case no SDG_H3226

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

   The Duplicate Reports, one for each Duplicate and Original sample pair
   relevant to the SDG, show all results, differences and primary
   supporting information for these QC samples.

MATRIX SPIKES

   The Matrix Spike Reports, one for each Spiked and Original sample pair
   relevant to the SDG, show all results, recoveries and primary supporting
   information for these QC samples.

DATA SHEETS

   The Data Sheet Reports, one for each client sample in the SDG, show all
   results and primary supporting information for these samples.

METHOD SUMMARIES

   The Method Summary Reports, one for each test used in the SDG, show all
   results, QC and method performance data for one analyte on one or two
   pages. (A test is a short code for the method used to do certain work
   to the client's specification.)

REPORT GUIDES

   The Report Guides, one for each of the above groups of reports, have
   documentation on how to read the associated reports.

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-RG
Version	3.06
Report date	08/08/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3226

LAB SAMPLE SUMMARY

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R506203-01	B1D7F1	216-A-8	WATER		F05-024	F05-024-009	06/07/05 07:45
R506203-02	Lab Control Sample		WATER		F05-024		
R506203-03	Method Blank		WATER		F05-024		
R506203-04	Duplicate (R506203-01)	216-A-8	WATER		F05-024		06/07/05 07:45

LAB SUMMARY
Page 1
SUMMARY DATA SECTION
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EBERLINE SERVICES/RICHMOND

SDG 7286
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3226

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7286	F05-024-009	B1D7F1	WATER		2.0 L		06/23/05 16	R506203-01	7286-001
		Method Blank	WATER					R506203-03	7286-003
		Lab Control Sample	WATER					R506203-02	7286-002
		Duplicate (R506203-01)	WATER		2.0 L		06/23/05 16	R506203-04	7286-004

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 08/08/05

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| SDG 7286 |
| Contact Melissa C. Mannion |

PREP BATCH SUMMARY

| Client Hanford |
| Contract No. 630 |
| Case no SDG H3226 |

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALI-FIERS
Beta Counting												
TC	WATER	Technetium 99 in Water	7136-078	10.0	1			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

| Lab id EBRLNE |
| Protocol Hanford |
| Version Ver 1.0 |
| Form DVD-PBS |
| Version 3.06 |
| Report date 08/08/05 |

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3226

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3226

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R506203-01 06/07/05 06/23/05	B1D7F1 216-A-8 F05-024-009	F05-024	WATER	7286-001	TC		08/02/05	08/05/05	MWT	Technetium 99 in Water
R506203-02	Lab Control Sample	F05-024	WATER	7286-002	TC		08/01/05	08/05/05	MWT	Technetium 99 in Water
R506203-03	Method Blank	F05-024	WATER	7286-003	TC		08/03/05	08/05/05	MWT	Technetium 99 in Water
R506203-04 06/07/05 06/23/05	Duplicate (R506203-01) 216-A-8	F05-024	WATER	7286-004	TC		08/01/05	08/05/05	MWT	Technetium 99 in Water

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
TC	F05-024	Technetium 99 in Water	TC99_TR_SEP_LSC	1			1	1	1		4
TOTALS				1			1	1	1		4

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 08/08/05

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7286-003

Method Blank

METHOD BLANK

SDG <u>7286</u>	Client/Case no <u>Hanford</u>		SDG <u>H3226</u>	
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>			
Lab sample id <u>R506203-03</u>	Client sample id <u>Method Blank</u>			
Dept sample id <u>7286-003</u>	Material/Matrix		<u>WATER</u>	
	SAF No <u>F05-024</u>			

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Technetium 99	14133-76-7	1.54	2.9	5.2	15	U	TC

216-A-8 Crib Characteriz. Borehole

QC-BLANK 53482

Lab id	<u>EBRLNE</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-DS</u>
Version	<u>3.06</u>
Report date	<u>08/08/05</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3226

7286-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7286</u>

Contact <u>Melissa C. Mannion</u>

Lab sample id <u>R506203-02</u>

Dept sample id <u>7286-002</u>

Client/Case no <u>Hanford</u>   SDG <u>H3226</u>

Contract <u>No. 630</u>

Client sample id <u>Lab Control Sample</u>

Material/Matrix _____ <u>WATER</u>

SAF No <u>F05-024</u>

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Technetium 99	1080	26	5.9	15		TC	1090	44	99	84-116	80-120

216-A-8 Crib Characteriz. Borehole

QC-LCS 53481

LAB CONTROL SAMPLES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>

Protocol <u>Hanford</u>

Version <u>Ver 1.0</u>

Form <u>DVD-LCS</u>

Version <u>3.06</u>

Report date <u>08/08/05</u>

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H3226

DUPLICATE

SDG 7286		Client/Case no Hanford	SDG H3226
Contact Melissa C. Mannion		Contract No. 630	
DUPLICATE	ORIGINAL		
Lab sample id R506203-04	Lab sample id R506203-01	Client sample id B1D7F1	
Dept sample id 7286-004	Dept sample id 7286-001	Location/Matrix 216-A-8	WATER
	Received 06/23/05	Collected/Volume 06/07/05 07:45 2.0 L	
		Custody/SAF No F05-024-009 F05-024	

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Technetium 99	0.621	1.9	5.4	15	U	TC	2.13	1.7	5.4	U	-		

216-A-8 Crib Characteriz. Borehole

QC-DUP#1 53483

DUPLICATES
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SUMMARY DATA SECTION
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Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/08/05

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SDG <u>7286</u>	Client/Case no <u>Hanford</u> <u>SDG H3226</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>
Lab sample id <u>R506203-01</u>	Client sample id <u>B1D7F1</u>
Dept sample id <u>7286-001</u>	Location/Matrix <u>216-A-8</u> <u>WATER</u>
Received <u>06/23/05</u>	Collected/Volume <u>06/07/05 07:45</u> <u>2.0 L</u>
	Custody/SAF No <u>F05-024-009</u> <u>F05-024</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Technetium 99	14133-76-7	2.13	1.7	5.4	15	U	TC

216-A-8 Crib Characteriz. Borehole

Lab id <u>EBRLNE</u>	
Protocol <u>Hanford</u>	
Version <u>Ver 1.0</u>	
Form <u>DVD-DS</u>	
Version <u>3.06</u>	
Report date <u>08/08/05</u>	

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3226

LAB METHOD SUMMARY

TECHNETIUM 99 IN WATER

BETA COUNTING

| Test _TC_ Matrix _WATER_ |
| SDG _7286_ |
| Contact _Melissa C. Mannion_ |

| Client _Hanford_ |
| Contract _No. 630_ |
| Contract _SDG H3226_ |

RESULTS

LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	CLIENT SAMPLE ID	Technetium 99	
Preparation batch 7136-078					
R506203-01		7286-001	B1D7F1	U	
R506203-02		7286-002	LCS (QC ID=53481)	ok	
R506203-03		7286-003	BLK (QC ID=53482)	U	
R506203-04		7286-004	Duplicate (R506203-01)	-	U

Nominal values and limits from method   RDLs (pCi/L)   15

216-A-8 Crib Characteriz. Borehole

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST FIX	SUF- CLIENT SAMPLE ID	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7136-078		2σ prep error 10.0 %	Reference Lab Notebook 7136 pg. 078												
R506203-01		B1D7F1	5.4	0.100			94		50			56	07/29/05	08/02	GRB-203
R506203-02		LCS (QC ID=53481)	5.9	0.100			98		50				07/29/05	08/01	GRB-219
R506203-03		BLK (QC ID=53482)	5.2	0.100			96		50				07/29/05	08/03	GRB-228
R506203-04		Duplicate (R506203-01) (QC ID=53483)	5.4	0.100			97		50			55	07/29/05	08/01	GRB-221
Nominal values and limits from method			15	0.100			20-105		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 9

| AVERAGES ± 2 SD FOR 4 SAMPLES | MDA _5.5_ ± _0.60_ |
| | YIELD _96_ ± _3_ |

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

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| Lab id _EBRLNE_ |
| Protocol _Hanford_ |
| Version _Ver 1.0_ |
| Form _DVD-LMS_ |
| Version _3.06_ |
| Report date _08/08/05_ |

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SAMPLE DELIVERY GROUP H3226

SDG 7286		Client Hanford
Contact Melissa C. Mannion	REPORT GUIDE	Contract No. 630
		Case no SDG H3226

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC
samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the
corresponding lab sample identification. The QC Summary Report shows at
the sample level how the lab organized the samples into batches and
generated QC samples. The Preparation Batch and Method Summary Reports
show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one
  assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a
  sample. It includes any sample preparation done by the client
  that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be
  processed and QCed together. These samples should have similar
  matrices.

  QC BATCH is not necessarily the same as SDG, which reflects
  samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix
  Spikes are shown that QC any of the samples. Due to possible
  reanalyses, not all results for all these QC samples may be
  relevant to the SDG. The Lab Control Sample, Method Blank,
  Duplicate, Matrix Spike and Method Summary Reports detail these
  relationships.

| Lab id EBRLNE |
| Protocol Hanford |
| Version Ver 1.0 |
| Form DVD-RG |
| Version 3.06 |
| Report date 08/08/05 |

SDG 7286
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3226

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/08/05

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SDG 7286
Contact Melissa C. Mannion

R E P O R T   G U I D E

Client Hanford
Contract No. 630
Case no SDG H3226

W O R K   S U M M A R Y

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

*   TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

*   SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

*   The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

*   PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

*   For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

*   The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/08/05

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SDG <u>7286</u>

Contact <u>Melissa C. Mannion</u>

R E P O R T   G U I D E

Client <u>Hanford</u>

Contract <u>No. 630</u>

Case no <u>SDG H3226</u>

D A T A   S H E E T

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>

Protocol <u>Hanford</u>

Version <u>Ver 1.0</u>

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Report date <u>08/08/05</u>

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GUIDE, cont.

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J   The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B   A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L   Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H   Similar to 'L' except the recovery was high.

P   The RESULT is 'preliminary'.

X   Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2   There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

*   An MDA is underlined if it is bigger than its RDL.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/08/05

SDG 7286		Client Hanford
Contact Melissa C. Mannion	**G U I D E , c o n t .**	Contract No. 630
		Case no SDG H3226

D A T A   S H E E T

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-RG
Version	3.06
Report date	08/08/05

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SAMPLE DELIVERY GROUP H3226

SDG 7286
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3226

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/08/05

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SAMPLE DELIVERY GROUP H3226

SDG 7286

Contact Melissa C. Mannion

R E P O R T   G U I D E

Client Hanford

Contract No. 630

Case no SDG H3226

D U P L I C A T E

The Duplicate Report shows all results, differences and primary
supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar
  usage. This applies both to the Duplicate and Original sample
  data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this
  test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of
  the difference of the RESULTs divided by their average expressed
  as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and
  a '-' is printed.

  For an analyte, if the lab did work for both samples but has
  data for only one, the MDA from the sample with data is used as
  the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of
  squares, of the errors of the results divided by the average
  result as a percent, hence the relative error of the difference
  rather than the error of the relative difference. The errors
  include those introduced by rounding the RESULTs prior to
  printing.

  If this limit is labeled TOT, it includes the preparation error
  in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 08/08/05

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SAMPLE DELIVERY GROUP H3226

SDG 7286

Contact Melissa C. Mannion

G U I D E ,   c o n t .

Client Hanford

Contract No. 630

Case no SDG H3226

D U P L I C A T E

2. A protocol factor (typically 2) times the average MDA as
a percent of the average result. This limit applies
when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by
the Difference Error Ratio (DER), which is the absolute value
of the difference of the results divided by the quadratic sum of
their one sigma errors, the same errors as used in the first
limit.

   Except for differences due to rounding, the DER is the
   same as the RPD divided by the first RPD limit with the
   limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor,
typically 2 or 3, shown in the header for the first RPD limit.

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Protocol Hanford

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REPORT GUIDE

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

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Protocol Hanford_____
Version Ver 1.0_____
Form DVD-RG_____
Version 3.06_____
Report date 08/08/05_____

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SAMPLE DELIVERY GROUP H3226

SDG 7286
Contact Melissa C. Mannion

G U I D E ,   c o n t .

Client Hanford
Contract No. 630
Case no SDG_H3226

M A T R I X   S P I K E

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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SAMPLE DELIVERY GROUP H3226

| SDG 7286 |
| Contact Melissa C. Mannion |

R E P O R T   G U I D E

| Client Hanford |
| Contract No. 630 |
| Case no SDG H3226 |

M E T H O D   S U M M A R Y

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

*   Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

    There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

*   The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

    The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

*   If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

    The J and X flags are as on the data sheet.

*   Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

*   Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3226

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GUIDE, cont.

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Case no SDG H3226

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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SAMPLE DELIVERY GROUP H3226

SDG 7286
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M E T H O D S U M M A R Y

* Count times are underlined if less than the nominal value
  specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if
  greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are
  greater than the method specified limit. Tracer drifts are
  not printed if percent moistures are.

* Days Held are underlined if greater than the holding time
  specified in the protocol.

* Analysis dates are underlined if before their planchet's
  preparation date or, if a limit is specified, too far after
  it.

For some methods, ratios as percentages and error estimates for them are
computed for pairs of results. A ratio column header like '1÷3' means
the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or
Matrix Spike results since their matrices are not necessarily
similar to client samples'.

The error estimate for a ratio of results from one planchet reflects
only counting errors since other errors should be correlated. For a
ratio involving different planchets, if QC limits are computed based on
total errors, the error for the ratio allows for the preparation errors
for the planchets.

The ratio is underlined (out of spec) if the absolute value of its
difference from the nominal value is greater than its error estimate.
If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the
sum of other Alpha or Beta emitters. This sum includes all relevant

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SDG 7286

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Client Hanford

Contract No. 630

Case no SDG H3226

M E T H O D   S U M M A R Y

results in the DVD database, whether reported or not. Results in the
sum are weighted by a particles/decay value specified by the lab for
each relevant analyte. Results less than their MDA are not included.
No sums are computed for Lab Control, Method Blank or Matrix Spike
samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error
for the ratio reflects both the error in the Gross result and the sum,
as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column
showing the total weight computed from associated isotopic results.
Ignoring results less than their MDAs, this is a weighted sum of the
isotopic results. The weights depend on the molecular weight and
half-life of each isotope so as to convert activities (decays) to weight
(atoms).

If a ratio of total computed to measured elemental uranium or thorium is
shown, the error for the ratio reflects the errors in all the
measurements.

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COLLECTOR		COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE	7N	DATA TURNAROUND
Pope/Pfister/Weis/Tyra/Mokler		TRENT, SJ	373-5869	TRENT, SJ			

SAMPLING LOCATION	PROJECT DESIGNATION *H3226 (7286)*	SAF NO.	AIR QUALITY ☐	45 Days / ~~45 Days~~
216-A-8	216-A-8 Crib Characterization Borehole - QC Samples	F05-024		

ICE CHEST NO.	FIELD LOGBOOK NO.	COA	METHOD OF SHIPMENT
GRR-03-222 3AUG20		119152ES10	~~GOVERNMENT VEHICLE~~ ① Fed Ex ② MAB 6/21/05

SHIPPED TO ①	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
~~Waste Sampling & Characterization~~ Eberline	SuPTR 15772	SuPTR 15772

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegitation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HNO3 to pH <2	HNO3 to pH <2	HCl to pH <2	HCl to pH <2	HNO3 to pH <2					
	Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	TYPE OF CONTAINER	G/P	G/P	G/P	G/P	G/P					
		NO. OF CONTAINER(S)	1	1	2	2	1					
		VOLUME	1000mL	1000mL	1L	1L	1000mL					
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	Isotopic Plutonium;	Isotopic Uranium;	Strontium-89,90 – Total Sr;	Technetium-99;	Americium-241;					

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B1D7F1	WATER	6-7-05	0745	x	x	x	x	x					

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JS Mokler/Agha 6.7-05	1035	K Bohne KB	6/7/05 1635
TA FRAZIER Jessa Uisia 6/16/05	1515	P. Pfister PP	6/16/05 1515
R. Pfister PP 6/16/05	1945	MO-026 FRI6 #1	6/16/05 1945
MO-026 RW 6/22/05	0955	MA Bowlin/MA Bowlin 6/22/05	0955
MA Bowlin/MA Bowlin 6/22/05	0955	FED EX	
FED EX 06/23/05		TFW	06/23/05 9:15
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

A-6003-618(03/03)

Client: _FLUOR HANFORD_   City _RICHLAND_   State _WA_

Date/Time received _06/23/05 9:15_ CoC No. _F05-024-009_

Container I.D. No. _SAWS 200_ Requested TAT (Days) _45_ P.O. Received Yes [ ]   No [ ]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [X]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [X]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [X]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [X]	No [ ]	N/A [ ]

5. Packing material is: Wet [ ]   Dry [X]

6. Number of samples in shipping container: ___1___ Sample Matrix ___W___

7. Number of containers per sample: ___2___ (Or see CoC _____)

8. Samples are in correct container   Yes [X]   No [ ]

9. Paperwork agrees with samples?   Yes [X]   No [ ]

10. Samples have: Tape [ ]   Hazard labels [ ]   Rad labels [ ]   Appropriate sample labels [X]

11. Samples are: In good condition [X]   Leaking [ ]   Broken Container [ ]   Missing [ ]

12. Samples are: Preserved [X] Not preserved [ ] pH _____ Preservative ___HCl___

13. Describe any anomalies:

_____

_____

_____

14. Was P.M. notified of any anomalies?   Yes [ ]   No [ ]   Date _____

15. Inspected by ___NEW___   Date: _06/23/05_ Time: ___2:30___

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. _____   Calibration date _____
Alpha Meter Ser. No. _____   Calibration date _____
Beta/Gamma Meter Ser. No. _____   Calibration date _____

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